SKINNER FISH FACILITY

John E. Skinner Delta Fish Protective Facility, located two miles upstream of the Banks Pumping Plant, contains behavioral guidance devices, known as louvers, that divert most fish away from the pumps that lift water into the California Aqueduct. The facility is a short distance away from Tracy Fish Collection Facility at the federal C.W. Jones Pumping Plant.

At the Skinner Fish Facility, up to 15 million fish a year are saved from the pumps and returned to the Delta. Operated since 1968 by the Department of Water Resources, the facility plays an important role in protecting Bay-Delta fish. The system is effective, but not flawless. Some fish fall prey to predator fish in the Clifton Court Forebay before reaching the screens and near the screens themselves. Small fish, larvae, and eggs can also slip through the louvers and make their way downstream of the Delta, where some, such as striped bass and catfish become the basis for recreational fisheries.

FACILITY NAME

The facility is named for John E. Skinner, a State Department of Fish and Game biologist who was a national authority on fish protective facilities and striped bass research.

Below: Skinner Fish Facility

LOCATION OF SKINNER FISH FACILITY

PUMPING RESTRICTIONS AID FISH MIGRATION

The Delta Accord, an agreement signed by State and federal agencies and stakeholder groups in 1994, provided standards and operational restrictions to protect anadromous and resident fish in the Delta. Two of these operational restrictions reduce diversions at the federal and State Delta fish facilities during periods when fish are moving through the Delta.

California Department of Water Resources' Mission...

To manage the water of California, in cooperation with other agencies, to benefit the state's people and protect, restore, and enhance the natural and human environments.

FOR MORE INFORMATION

Visit DWR'S Web site at
http://www.dwr.water.ca.gov

Tours of the Skinner Fish Facility can be arranged by writing to: Department of Water Resources
Delta Field Division
Route 1, Box 39
West End of Kelso Road
Byron, CA 94514
or by calling (209) 835-7106

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CALIFORNIA'S STATE WATER PROJECT

John E. Skinner Delta Fish Protective Facility

THE STATE WATER PROJECT

Planned, designed, constructed and operated by the California Department of Water Resources, the State Water Project (SWP) is the largest state-built, multi-purpose, user-financed water project in the United States.

The SWP, spanning more than 600 miles from Northern California to Southern California, includes 34 storage facilities, 20 pumping plants, four pumping-generating plants, five hydroelectric power plants, and approximately 700 miles of canals, tunnels, and pipelines.

The SWP's main purpose is to provide a water supply – that is, to divert and store water during wet periods and distribute it to areas of need during dry periods in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Other project purposes include flood control, power generation, recreation, fish and wildlife enhancement, and water quality improvements to the Sacramento-San Joaquin Delta.

The $1.75 billion bond issue of 1960 provided initial funding for the SWP and payments received from 29 contracting agencies are paying off the bonds. These 29 urban and agricultural water agencies have long-term contracts for the delivery of SWP water. Approximately 70 percent of SWP water goes to urban users and 30 percent to agricultural users. These SWP contracting agencies are repaying the cost, including interest, of financing, building, operating, and maintaining the SWP water storage and delivery system.

Left: Bucket takes fish from tank to count station to be identified, measured, and recorded.

HOW THE FACILITY WORKS

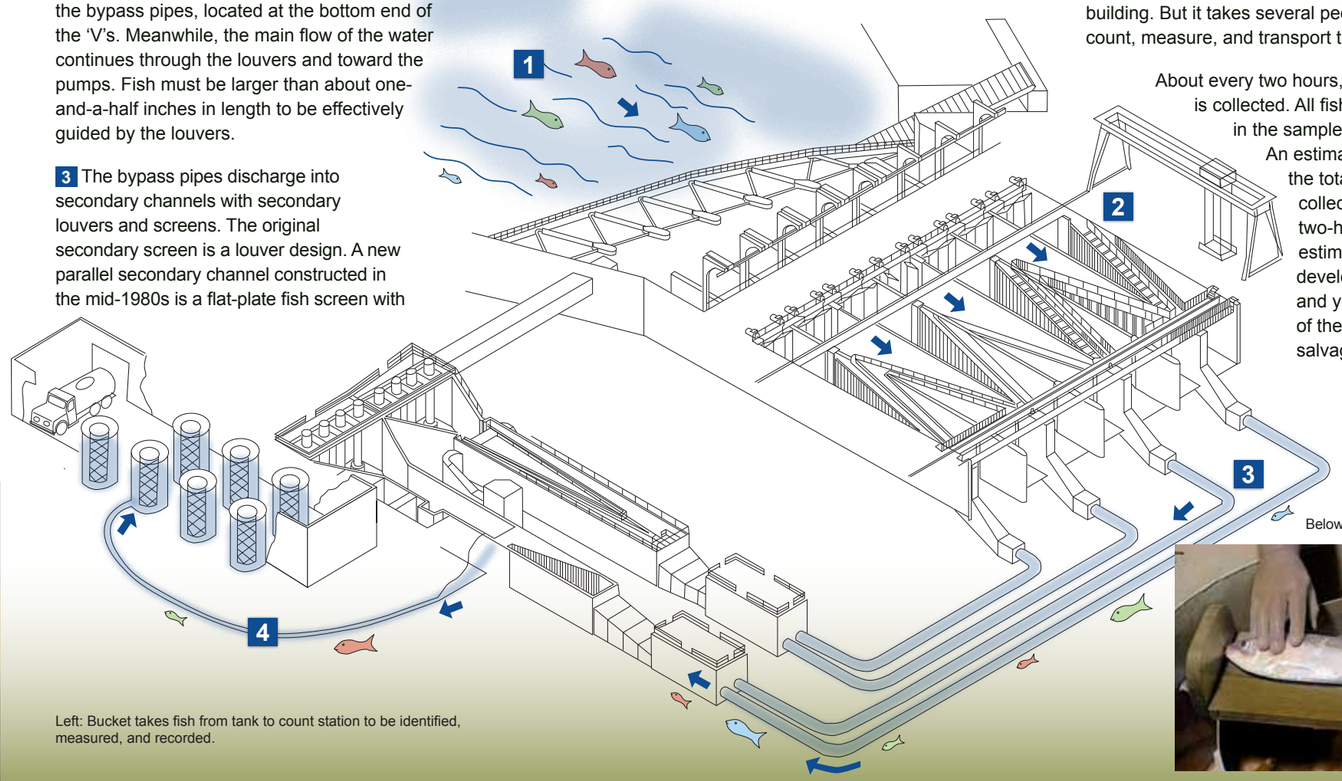
The facility guides fish through four basic steps:

1 Fish move with the current into the intake channel from Clifton Court Forebay, located in the southern portion of the Sacramento-San Joaquin Delta. A floating trash boom and a two-inch trash rack divert large fish and most of the floating debris before it enters the louver system.

2 Small fish are diverted from the intake channel into bypass pipes by a series of metal louvers, which resemble vertical window blinds configured into a large 'V' shape. These primary louvers cause a rippling in the water. The fish, avoiding this turbulence, swim away from the louvers and into the bypass pipes, located at the bottom end of the 'V's. Meanwhile, the main flow of the water continues through the louvers and toward the pumps. Fish must be larger than about one-and-a-half inches in length to be effectively guided by the louvers.

3 The bypass pipes discharge into secondary channels with secondary louvers and screens. The original secondary screen is a louver design. A new parallel secondary channel constructed in the mid-1980s is a flat-plate fish screen with very small holes which excludes all fish. The fish are diverted through a second set of bypass pipes into holding tanks. The main purpose of the secondary channels is to further concentrate the salvaged fish into a manageable amount of water.

4 Seven 20-foot diameter concrete tanks hold the fish in 10 to 12 feet of water. A vertical cylindrical screen in each tank contains the fish while water is continuously circulated through the tanks and back into the intake channel. Samples of the fish are taken every two hours or less from the holding tanks, identified, counted and measured by trained Department of Water Resources staff.



Depending on the species being collected in the holding tanks, the fish are loaded every 12 hours into a tanker truck and supplied with oxygen for the trip back to the Delta, where they are released in either the Sacramento River or the San Joaquin River at locations away from the influence of the pumps.

FACILITY OPERATIONS HOURS

Fish are collected at the facilities 24 hours a day when the Banks Pumping Plant pumps are operating.

One person can direct many of the facility's functions from a control console in a separate building. But it takes several people to identify, count, measure, and transport the fish.

About every two hours, a sample of fish is collected. All fish of each species in the sample are measured. An estimate is then made of the total number of fish collected during that two-hour period. These estimates are used to develop daily, monthly, and yearly estimates of the number of fish salvaged.

Below: sample fish are measured.

SPECIES OF FISH COMMONLY COLLECTED AT SKINNER:

Chinook Salmon

Steelhead

Striped Bass*

White Catfish*

American Shad*

Hardhead

Riffle Sculpin

Threadfin Shad*

Splittail

Bluegill*

Delta Smelt

Crappie*

Inland Silverside

Green Sunfish*

Carp*

Pacific Lamprey

Yellowfin Goby*

Tule Perch

Sacramento Blackfish

White Sturgeon

*Species that are not Delta natives but have been introduced into the estuary